Networking your world

NP-100SE+/PD

PoE SERIES

USER'S MANUAL

Http://www.netsys.com.tw

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Statement of Conditions

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Maximum signal rate derived from IEEE Standard specifications. Actual data throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, lower actual data throughput rate. Netsys does not warrant that the hardware will work properly in all environments and applications, and makes no warranty and representation, either implied or expressed, with respect to the quality, performance, merchantability, or fitness for a particular purpose. Make sure you follow in line with the environmental conditions to use this product.

Safety Warnings

For your safety, be sure to read and follow all warning notices and instructions before using the device.

- **DO NOT** open the device or unit. Opening or removing the cover may expose you to dangerous high voltage points or other risks. ONLY qualified service personnel can service the device. Please contact your vendor for further information.
- **Use ONLY** the dedicated power supply for your device. Connect the power to the right supply voltage (110V AC used for North America and 230V AC used for Europe).
- **Place** connecting cables carefully so that no one will step on them or stumble over them. DO NOT allow anything to rest on the power cord and do NOT locate the product where anyone can work on the power cord.
- **DO NOT** install nor use your device during a thunderstorm. There may be a remote risk of electric shock from lightning.
- **DO NOT** expose your device to dampness, dust or corrosive liquids.
- **DO NOT** use this product near water, for example, in a wet basement or near a swimming pool.
- **Connect ONLY** suitable accessories to the device.
- **Make sure** to connect the cables to the correct ports.
- **DO NOT** obstruct the device ventilation slots, as insufficient air flow may harm your device.
- **DO NOT** place items on the device.
- **DO NOT** use the device for outdoor applications directly, and make sure all the connections are indoors or have waterproof protection place.
- **Be careful** when unplugging the power, because it may produce sparks.
- **Keep** the device and all its parts and accessories out of the reach of children.
- **Clean** the device using a soft and dry cloth rather than liquid or atomizers. Power off the equipment before cleaning it.
- This product is **recyclable**. Dispose of it properly.

Foreword

The Netsys Power over Ethernet (PoE) Adapter delivers data and electrical power to access points using standard Category 5 Ethernet Cable. This eliminates the need for electrical cable and power converters at each access point location.

The Power over Ethernet (PoE) Adapter is easy to install. It's Plug and Play and requires no tools or software. Best of all, the PoE is lightweight and compact in size meaning you can locate it virtually anywhere and never know it's there. The PoE transfer data on Category 5 Ethernet cable pairs 1/2 and 3/6. Power is transmitted on unused Ethernet pairs 4/5 and 7/8. It has an operational range of up to 328 ft/100m which is a requirement of the Fast Ethernet standard.

Terminal unit with the PoE you can mount devices such as an access point virtually anywhere in a building without worrying about the location of a power supply.

Attention:

Be sure to read this manual carefully before using this product. Especially Legal Disclaimer, Statement of Conditions and Safety Warnings.

Caution:

The NP-100SE+/PD is for **indoor** applications only. This product does not have waterproof protection, please do not use in outdoor applications.

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Chapter 1. Unpacking Information

1.1 Check List

Carefully unpack the package and check its contents against the checklist.
Package Contents

1. 1 x PSE and 1x PD
2. 1 x **48V** DC Adaptor
3. 1 x DC to DC Plug Cable

Note1:

Please inform your dealer immediately for any missing or damaged parts.
If possible, retain the carton including the original packing materials.
Use them to repack the unit in case there is a need to return for repair.

Note2:

1. Do not use sub-standard power supply. Before connecting the power supply to the device, be sure to check compliance with specifications. The NP-100SE of the power supply at least uses DC48V/0.4A.
2. Power supply included in package is commercial-grade. Do not use in harsh environments.

Chapter 2. Hardware Description

This section describes the important parts of the converter. It features the front panel and rear panel.

Figure 2.1 Front Panel of PSE

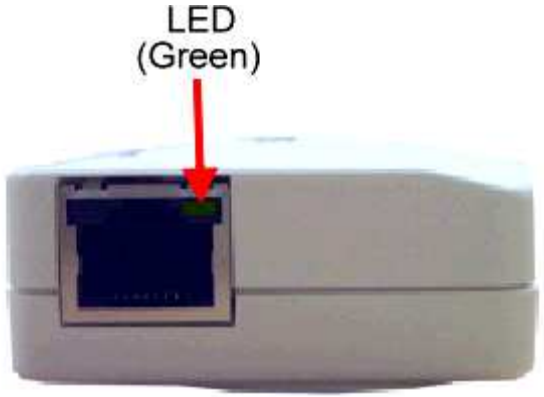


Figure 2.2 Rear Panel of PSE

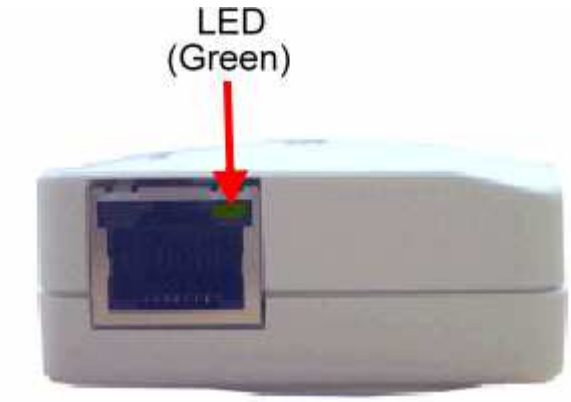


Figure 2.3 Front Panel of PD

Figure 2.4 Rear Panel of PD

2.1 LED Indicators

PSE or PD has a LED indicator. The following Table shows the description. (Table 2-1)

Table 2-1 LED Indicators Description and Operation

Model	Color	Status	Descriptions
PSE	Green	On	The PSE is connected with PD and functioning properly.
		Off	PSE is not connected with PD.
PD	Green	On	The PD is connected with PSE and functioning properly.
		Off	PD is not connected with PSE.

2.2 Connectors

Table 2-2 Connectors shown of the PSE / PD

Model	Connectors	Type	Description
PSE	Power	Power Jack	For connecting to **DC 48V** power adapter, regarding the PSE power specification please refer to serial sticker of the bottom.
	Data	RJ-45	For connecting to an Ethernet equipped device
	PoE Out	RJ-45(Green LED)	For connecting to PD's "PoE IN" to transfer Data and DC Power.
PD	DC Out	Power Jack	Connect proper DC plug from "**DC OUT**" of PD to remote device.
	Data	RJ-45	Connect the RJ-45 cable from **"Data"** of PD to the RJ-45 port of remote device.
	PoE IN	RJ-45(Green LED)	For connecting to PSE's "PoE Out" to receive Data and DC Power.

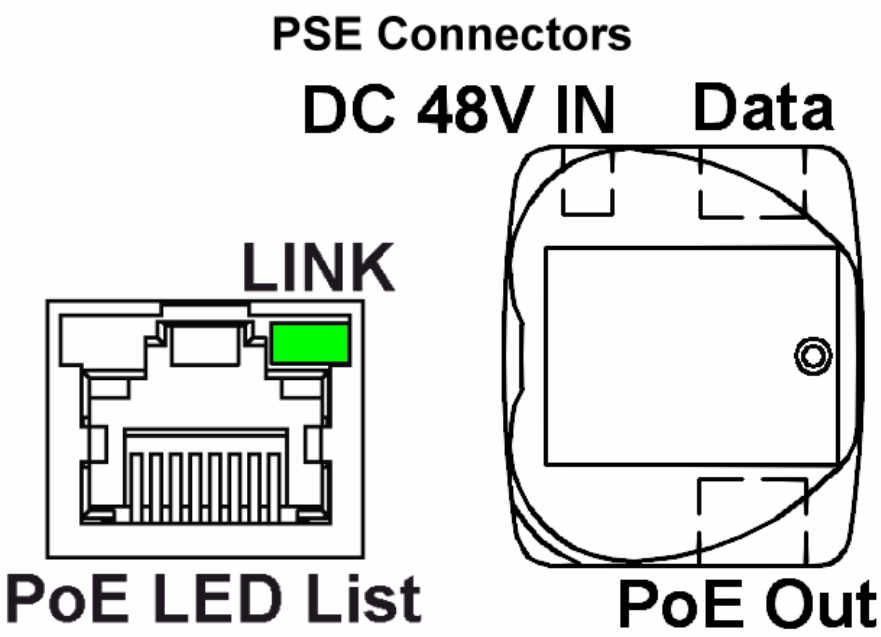


Figure 2.5 PSE Connectors

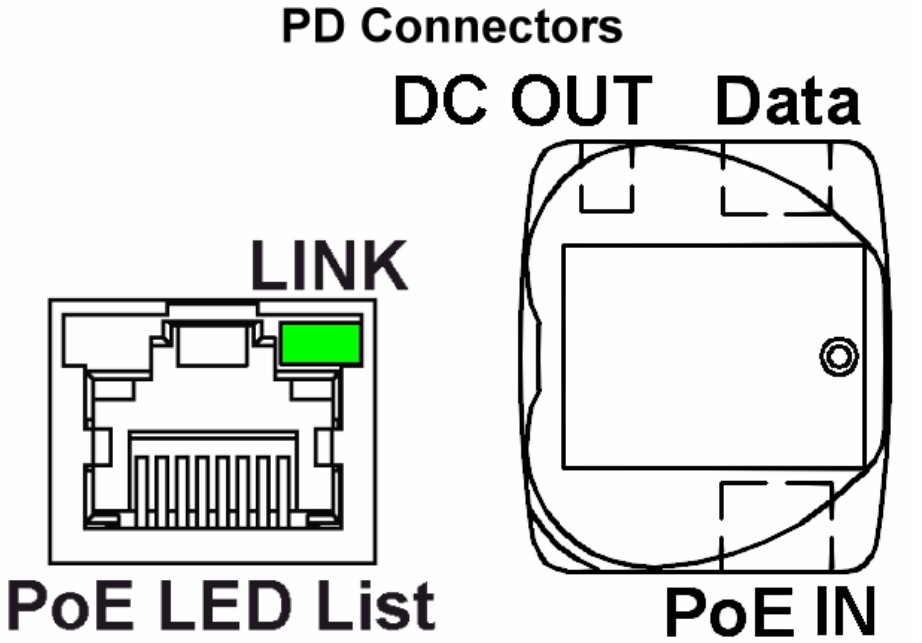


Figure 2.6 PD Connectors

Chapter 3. Installation

3.1 Hardware Installation

This chapter describes how to install the PoE and establishes network connections. You may install the PoE on any level surface (ex. table). However, please take note of the following minimum site requirements before you begin.

3.2 Pre-installation Requirements

Before the start of actual hardware installation, make sure to provide the right operating environment, including power requirements, sufficient physical space, and proximity to other network devices that are to be connected. Verify the following installation requirement:

- Power requirements: **48VDC / 0.4A**
- The PoE should be located in a **cool dry place**, with at least **10cm/4in** of space at the front and back for well ventilation.
- Place the PoE away from **direct sunlight**, **heat sources**, or areas with a high amount of electromagnetic interference.
- PD has 5V DC/9V DC/12V DC three kinds of DC power option, You can according to demand purchase of equipment
- Check if network cables and connectors needed for installation are available.

Note:

Each of the PD device can only output a DC power, choice of powered device for 5V DC or 9V DC or 12V DC.

3.3 Basic connections

Please refer to PoE application as follows. (Figure 3.1)

PSE:

1. Connect a standard network cable from Hub/Switch to **"Data"** port of PSE.
2. Connect the long cable that will be used to connect to remote device to the port **"PoE OUT"**.
3. Connect the adaptor to **"48V DC"** of PSE.

PD:

1. Connect the standard network cable from **"PoE OUT"** port of PSE to **"PoE IN"** port of PD.
2. Connect the RJ-45 cable from **"Data"** port of PD to the RJ-45 port of remote device.
3. Connect proper DC plug from "**DC OUT**" port of PD to remote device.

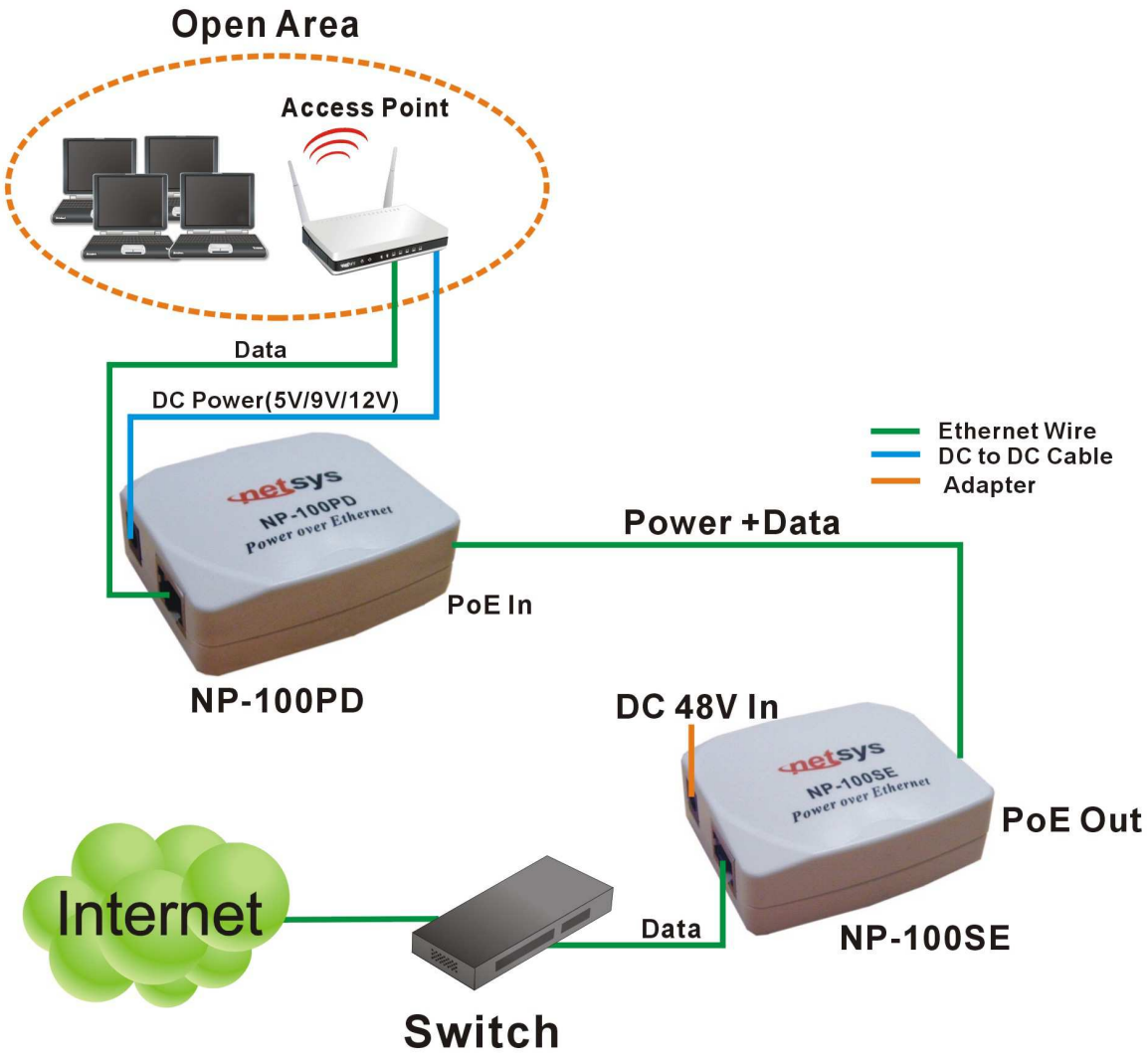


Figure 3.1 PoE Application diagram

Appendix A: Cable Requirements

A CAT 3, 4 or 5 UTP (unshielded twisted pair) cable is typically used to connect the Ethernet device to the modem. A 10Base-T cable often consists of four pairs of wires, two of which are used for transmission. The connector at the end of the 10Base-T cable is referred to as an RJ-45 connector and it consists of eight pins. The Ethernet standard uses pins 1, 2, 3 and 6 for data transmission purposes. (Table A-1)

Table A-1 RJ-45 Ethernet Connector Pin Assignments

PIN #	MDI		MDI-X	
	Signal	Media Dependant interface	**Signal**	Media Dependant interface-cross
1	TX+	Transmit Data +	RX+	Receive Data +
2	TX-	Transmit Data -	RX-	Receive Data -
3	RX+	Receive Data +	TX+	Transmit Data +
4	--	Unused	--	Unused
5	--	Unused	--	Unused
6	RX-	Receive Data -	TX-	Transmit Data -
7	--	Unused	--	Unused
8	--	Unused	--	Unused

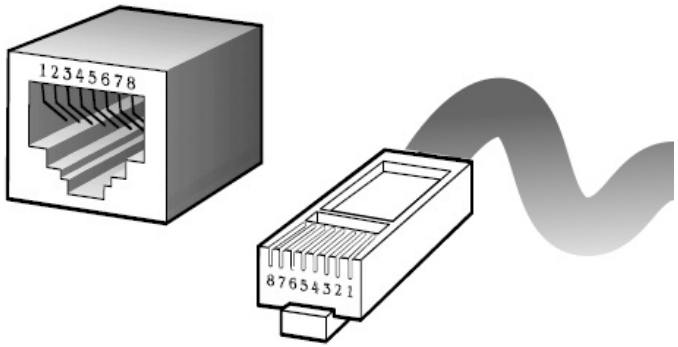


Figure A-1 Standard RJ-45 repectacle/connector

Note:

Please make sure your connected cables are with same pin assignment as above table before deploying the cables into your network.

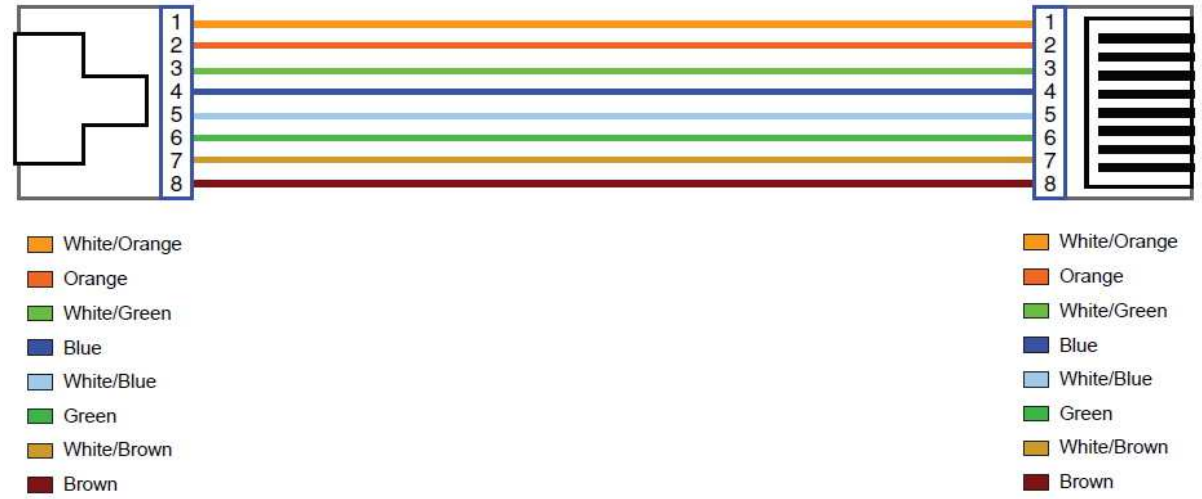


Figure A-2 Pin Assignments and Wiring for an RJ-45 Straight-Through Cable

Figure A-3 Pin Assignments and Wiring for an RJ-45 Crossover Cable

Appendix B: Product Specification

Key Features and Benefits

1. Compliant with IEEE 802.3af, IEEE 802.3at (NP-100SE+), Power over Ethernet, IEEE802.3/802.3u 10/100Base-TX
2. Provides 48V DC power over RJ-45 Ethernet cable to device with Ethernet port
3. LED indicators indicate power input
4. Distance up to 100 meters with RJ-45 Ethernet cable
5. Auto-detect of PoE 802.3af/802.3at equipment, protect devices from being damaged by incorrect installation

Product Specification

Specification	
Model	NP-100SE+ (PSE)
Input Specification	
Data Interface	RJ-45 Jack (See Pin Assignment)
Input Voltage	36 ~ 57 Vdc (48V)
Input Current	400mA MAX.
Input	@Vin=48Vdc
Output Specification	
PD Detection & Classification	IEEE802.3af, IEEE802.3at compliant
PoE Interface	RJ-45 Jack
Output Voltage	48V±10%
Output Current	350mA MAX
Output Power	15.4W MAX
LED Display	PoE Active (Green)
General Specification	
Operating Temperature	0°C ~ 50°C (32°F ~ 122°F)
Storage Temperature	-20°C ~ 70°C (-4°F ~ 158°F)
Humidity	Up to 90% (non-condensing)
Cooling	Free air convection
Dimension	66(W)mmx56.4mm(L)x25mm(H)

Choice of powered device for 5V DC, 9V DC or 12V DC

Specification	
Model	NP-100PD (PD)
Input Specification	
Input Signal	IEEE 802.3af compliant signal from PSE
Data Interface	RJ-45 Jack (See Pin Assignment)
Input Voltage	36 ~ 57 Vdc
Input Current	350mA MAX.
Input	@Vin=48Vdc
Output Specification	
Connect PSE power Interface	DC-Jack
Output Voltage	5Vdc/9Vdc/12Vdc (optional)
Output Voltage Accuracy	±2.0% MAX
Output MAX Current	2000mA for 5V/1100mA for 9V/800mA for 12V
Output Power	10W MAX
General Specification	
Operating Temperature	0°C ~ 50°C(32°F ~ 122°F)
Storage Temperature	-20°C ~ 70°C (-4°F ~ 158°F)
Humidity	Up to 90% (non-condensing)
Cooling	Free air convection
Dimension	66(W) mmx56.4mm (L) x25mm (H)

Appendix C: Troubleshooting

The PoE can be easily monitored through its comprehensive panel indicators. These indicators assist the network manager in identifying problems the hub may encounter. This section describes common problems you may encounter and possible solutions.

1. Question:	The device connected to PD cannot be powered.
Answer:	1. Please check if PD is connected to IEEE 802.3af complied device. And check if LED on the PD is blinking once connected to IEEE 802.3af complied device. 2. Please check if the cable type is 8-wire UTP, Category 5, EIA 568 within 100 meters. 3. Please check if power for PD and device meets requirement. 4. Please check the specification of the powered device.

2. Question:	Can the device only work at 100 Mbps when it is connected to Gigabit Ethernet device?
Answer:	PSE/PD use 4-wires for data transmission (1, 2, 3, 6) and 4-wires for power supply (4, 5, 7, 8). Gigabit Ethernet device connects to Base Unit Power over Ethernet (PSE)/10Watt P.O.E Terminal Unit (PD) will auto-negotiate to 100Mbps speed and work at 100Mbps speed.

Appendix D: Compliance and Safety Information

FCC Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a computing device, pursuant to Part 15 of FCC class B rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generate, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. The equipment and the receiver should be connected to outlets on separate circuits.
4. Consult the dealer or an experienced radio/television technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

If this telephone equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the

proper functioning of your equipment. If they do, you will be notified in advance in order for you to make necessary modifications to maintain uninterrupted service.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

Important Safety Instructions

- **Caution:** The direct plug-in wall transformer serves as the main product for disconnecting. The socket outlet shall be installed near the product and be readily accessible.
- **Caution:** Use only the power supply included with this product. In the event the power supply is lost or damaged:In the United States, use only with CSA certified or UL listed Class 2 power supply.
  IN Europe, use only with CE certified power supply.
- **Do not** use this equipment near water, for example in a wet basement.
- **Avoid** using a telephone during an electrical storm. There may be a remote risk of electrical shock from lightning.
- **Do not** use the telephone to report a gas leak in the vicinity of the leaking area.
- If you experience trouble with this unit, please contact customer service of your dealer immediately.
- **DO NOT DISASSEMBLE THIS EQUIPMENT**. It does not contain any user serviceable components.

FCC Warning

This equipment has been tested to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment can generate, use, and radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at owner's expense.

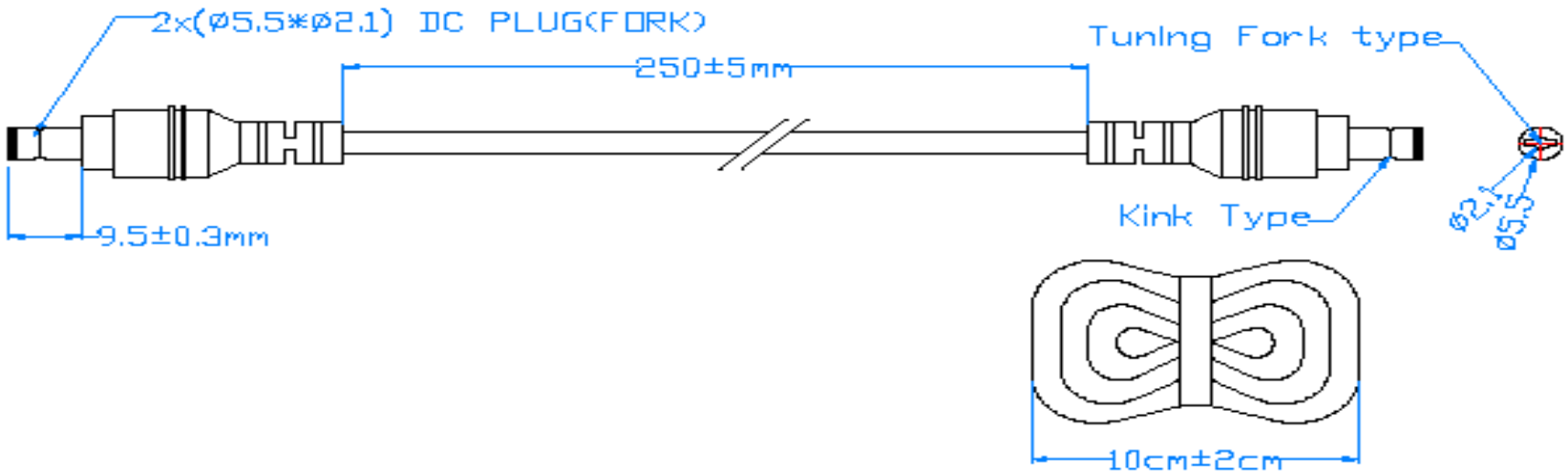
CE Mark Warning

This is a class B product. In a domestic environment, this product may cause radio interference in which case the user may be required to take adequate measures.

WEEE Warning

To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

Appendix E: DC Power Cable Information



Note:
1. PLUG: 2x(ø5.5*ø2.1)mm DC PLUG (TUNING FORK).
2. CABLE: 18AWG / UL1185 / CSA / Black / 250mm / SPIRAL SHIELD TINNED

Warranty

The original owner that the product delivered in this package will be free from defects in material and workmanship for one year parts after purchase.

There will be a minimal charge to replace consumable components, such as fuses, power transformers, and mechanical cooling devices. The warranty will not apply to any products which have been subjected to any misuse, neglect or accidental damage, or which contain defects which are in any way attributable to improper installation or to alteration or repairs made or performed by any person not under control of the original owner.

The above warranty is in lieu of any other warranty, whether express, implied, or statutory, including but not limited to any warranty of merchantability, fitness for a particular purpose, or any warranty arising out of any proposal, specification, or sample. We shall not be liable for incidental or consequential damages. We neither assume nor authorize any person to assume for it any other liability.

WARNING:

WARRANTY VOID IF USE COMMERCIAL-GRADE POWER SUPPLY IS USED AT HARSH ENVIRONMENTS.

Chinese SJ/T 11364-2006

部件名称	有 毒 有 害 物 质 或 元 素					
	铅(Pb)	汞(Hg)	镉(Cd)	六价铬[Cr(VI)]	多溴联苯(PBB)	多溴二苯醚(PBDE)
结构壳体	○	○	○	○	○	○
电路组	○	○	○	○	○	○
电源供应器	○	○	○	○	○	○
线材	○	○	○	○	○	○
包装及配件	○	○	○	○	○	○
○：表示该有毒物质在该部件所有均质材料中的含量均在 SJ/T 11364/2006 标准规定的限量要求以下。 ╳：表示该有毒物质至少在该部件的某依均质材料中的含量超出 SJ/T 11364-2006 标准规定的限量要求。						

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